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3,064,874

FOOD CONTAINER

Filed July 18, 1961

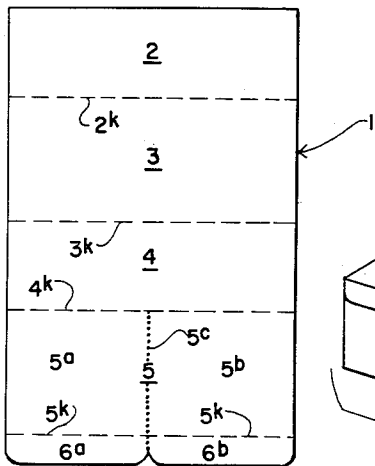


Fig. 1

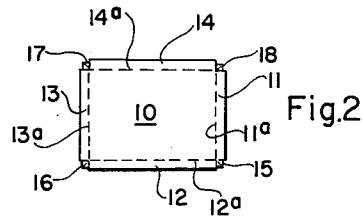


Fig. 2

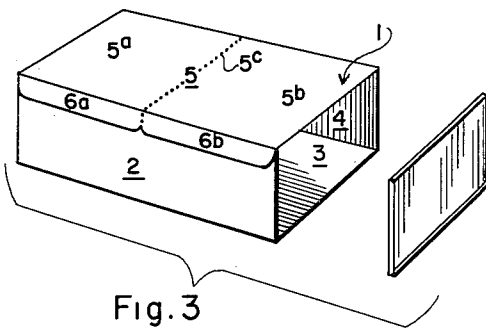


Fig. 3

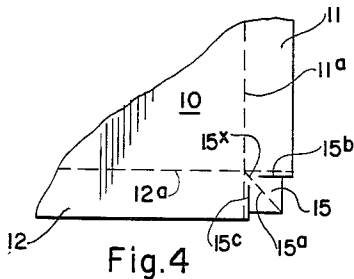


Fig. 4

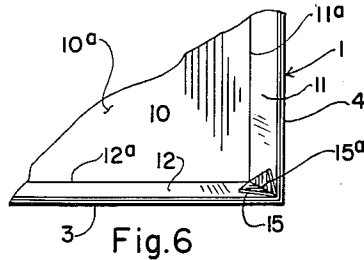


Fig. 6

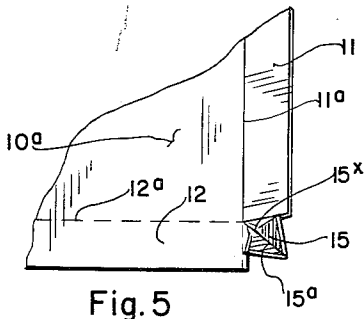


Fig. 5

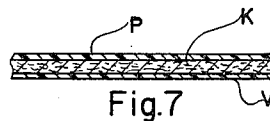


Fig. 7

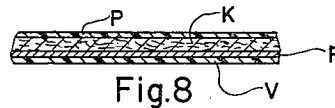


Fig. 8

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3,064,874

FOOD CONTAINER

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This invention relates to the structure of paperboard blanks and to containers to be made from said blanks, and more particularly relates to an improved container and end closure structure.

It is an important object of this invention to provide an improved container structure which is leakproof, and especially to provide an improved end structure which is made from blanks having plastic-coated surfaces suitable for the application of heat-sealing techniques wherein the plastic surfaces are welded as distinguished from glued, although the present structure can be glued, if desired, or assembled by using any other adhesive.

Another important object of the invention is to provide an improved end closure structure for a container which can be made from laminated blanks having a liquid-absorbent core, the structure of the container being such that the cut edges of the blank face outwardly of the finished container or are otherwise protected to prevent wetting of the core by the contents of the container, known in the art as wicking.

It is another very important object of the invention to provide an inexpensive and easily set-up container and end closure which is especially adapted for packaging moist or liquid food products, the container being designed to meet the requirements of government food packaging regulations. However, the present container is also suitable for the packaging of other products such as oils, jellies, syrups, acids, alkalies, detergents, bleaches and other solid or liquid products whether hot, cold, or frozen.

Still another major object of the invention is to provide a novel container having heat-sealed seam closures adapted especially for use in packaging frozen foods, such as ice cream, wherein the sealing of the carton after filling with a perishable frozen food is accomplished externally of the carton at positions relatively remote from the contents thereof so as to avoid melting down of said contents during sealing.

Another very important object associated with the previously mentioned object is to reduce to a minimum the transfer of heat into the contents of the container during sealing thereof by employing layers of metal foil laminated to the surfaces of the blanks of which the container is made, said metal foil conducting the heat away from the vicinity of heat application so that it may be quickly dissipated instead of remaining in the area of the seal to penetrate the container and cause localized melt-down.

It is a further object of the invention to simultaneously provide in the same end structure an external-flange type of heat seal designed to keep the heat remote from the container contents and also to provide seam structures wherein the cut edges of the blanks are concealed and protected from moisture.

Still another object of the invention is to provide a novel end structure which is especially strong so as to

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prevent distortion of the container or damage thereto as a result of dropping and which end structure is especially well reinforced and sealed in the corners.

Other objects and advantages will become apparent during the following discussion of the drawing wherein:

FIG. 1 is a plan view of a blank suitable for making the body portion of a container according to the present invention, embossed bend lines being shown as dashed lines;

FIG. 2 is a plan view of an end closure blank for a container according to the present invention, the dashed lines indicating embossed bend lines and solid lines indicating cut lines;

FIG. 3 is an exploded perspective view of a container employing one body blank as shown in FIG. 1 and either one or two end blanks as shown in FIG. 2;

FIG. 4 is an enlarged fragmentary view of the lower right-hand corner of the end blank shown in FIG. 2;

FIG. 5 is an enlarged view similar to FIG. 4 but showing the corner tab folded toward its final position and showing the edge flanges folded partway toward their final positions around their embossed bend lines;

FIG. 6 is an enlarged perspective view of one corner of the end panel inserted in the body blank and showing the end tab bent into final position and overlying the flanges of the end blank;

FIG. 7 is an enlarged cross-sectional view showing one form of laminated material from which the blanks and the container shown in the other figures may be made; and

FIG. 8 is an enlarged cross-sectional view showing another form of laminated material also suitable for use in making the blanks and containers of the present invention.

Referring now to FIG. 1, the body blank 1 comprises four main body panels 2, 3, 4 and 5, the lower panel being divided into two sections 5a and 5b by a transverse line of perforations 5c, the purpose of this line being hereinafter set forth. The main body panels 2, 3, 4 and 5 have their longitudinal edges defined by crease lines 2k, 3k, 4k and 5k, the latter crease line separating flaps 6a and 6b from the main panel sections 5a and 5b, respectively.

Referring now to FIG. 2, this figure shows one of the end blanks of which two are usually required to complete a container. The end blank shown in FIG. 2 is referred to generally by the reference character 10, and further includes four end flaps 11, 12, 13 and 14 all of which are mutually joined with the main panel of the end blank by embossed crease lines labeled 11a, 12a, 13a and 14a.

FIG. 4 clearly illustrates the corner construction of each end blank 10 and shows that each corner includes a tab, labeled 15, 16, 17 and 18. Each of these tabs has a diagonal crease line, such as the crease line 15a, FIG. 4, which begins near the crossing of the flange bend lines 11a and 12a in FIG. 4 and extends to the end of the tab. The length of the tab along its diagonal line 15a is the same as the width of each adjacent flange, or in other words, the length of the diagonal of each tab, as measured along the crease line 15a in FIG. 4, is equal to the length of the portions of the crease lines 11a and 12a which lie on the adjacent flanges. In addition the tabs are partly separated from the flanges by slits, such as the slits 15b

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and 15c which extend inwardly along the tabs parallel with the adjacent crease lines and offset therefrom. This structure leaves a small overhang at each flange edge, which overhangs will jam together in the corner when the flanges are bent toward each other and provide a tighter corner seal helping to prevent leakage from the container, the principal corner seal being provided by the uncut web in the vicinity of reference numeral 15x, FIGS. 4 and 5.

Before entering the end panels in the body panel portion, as shown in FIG. 3, the end panels are bent as partially shown in FIG. 5. First, the tabs 15, 16, 17 and 18 are bent inwardly toward the center of the panel 10, and then the flanges 11, 12, 13 and 14 are bent inwardly around their crease lines 11a, 12a, 13a and 14a until the flanges lie at right angles with respect to the surface 10a of the panel 10. Then the panel is inserted in the body 1 and the tabs 15, 16, 17 and 18 are formed back into the corners to overlie the flanges, the tabs being bent at right angles about their diagonal crease lines, such as the crease line 15a in FIG. 6.

When the end blanks are set in place as shown in FIG. 6, they may be pre-sealed to the body blank for the purpose of holding them in place; and then the tabs in the four corners may be formed to overlie the flanges, as shown. When all of the end tabs overlie the flanges the peripheral external edges of the container end are then subjected to heat and pressure so as to seal all of the body panel edges, flanges and tabs together and form a final bond therebetween. As stated above, when the assembly has progressed to the stage shown in FIG. 6, the flanges of the end panels may be sealed to the main panels as a preliminary step in order to hold the end panels in place, but this is not necessary to this stage of the assembly. If desired, the panels may be held in place by some other means until the tabs are formed outwardly prior to final heat-sealing of the entire assembly.

Also, as stated in the objects of this invention, the joints need not necessarily be heat-sealed joints, but may be held together by adhesive means if desired.

In addition, the main seam which forms the hollow polygonal body prior to insertion of the end panels can be sealed at any stage in the proceedings. On a practical basis, however, it is probably desirable that the longitudinal seam between the panel 2 and the flaps 6a and 6b be sealed prior to insertion and sealing of the end panels.

The line of perforations 5c provides means whereby the container need not be opened on both sides simultaneously, but instead one panel 5a can remain closed while the other panel 5b is opened, or vice versa. This transverse line of perforations 5c provides a weakened junction between the panels 5a and 5b along which the container may be torn open. For instance, if two flavors of ice cream are packaged in the present container, either flavor can be used, without necessity of opening the entire container and exposing the other flavor, simply by tearing up one of the closure flaps 6a or 6b to break its seal along panel 2 and then tearing the panel 5 of the container directly in half along the transverse line of perforations 5c.

Referring now to FIG. 7, this figure shows on an enlarged scale a laminated material suitable for making the present blanks and containers. This laminate comprises a core of virgin kraft K coated on both sides with a plastic. This plastic should be a heat-sealable material such as polyethylene P, at least on the inner surface of the container, and for the sake of appearance, the other surface of the container should also be coated with a plastic material which may also be polyethylene, or which may alternatively comprise some other coating such as vinyl V, it merely being necessary that the other coating V will bond to the polyethylene P of the inner coating when heat is applied thereto so that the carton may be heat-sealed by the above mentioned steps which closely resemble welding.

FIG. 8 is similar to FIG. 7 except that a metal foil F

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is interposed between the outer plastic coating V and the inner core K for the sake of dissipating heat from the vicinity of an area being heat-sealed so as to prevent the heat in that area from reaching the contents of the container with such intensity that the contents are melted down and therefore damaged. This foil F can be laminated to the kraft core K by any suitable adhesive, such as latex, the method of attachment of foil to a kraft core being known per se in the prior art. This disclosure is not to be limited, however, to any particular adhesive, and as stated above it is only necessary that at least one of the plastics be a weldable type which can be sealed at a temperature low enough that the kraft K will not be damaged by the heat applied.

It is also contemplated that the laminate may have other cores than the kraft core referred to above.

Although the cross-sectional shape of the container illustrated in the drawing is rectangular, it is to be understood that my invention is not to be limited to this shape, but may be triangular, square, hexagonal, or any other polygonal shape as may be desired, since the invention is not to be limited to the exact form shown in the drawings.

I claim:

1. A container comprising body panels joined together along longitudinal lines to form a hollow polygonal body; and end closure means closing at least one end of said body and each including an end panel; a plurality of flanges bent up around the end panel along crease lines therebetween and fitted into the hollow body, and sealed thereagainst; and a tab integral with the end panel in each corner thereof within the space between extensions of the crease lines across the widths of the flanges, the tabs being partially separated from the flanges by slits extending partway inwardly toward the intersection of said crease lines; and each tab being folded along a diagonal line equidistant between said crease lines and sealed over portions of adjacent flanges near their intersection, the length of the tab along said diagonal line being substantially equal to the width of the flanges.

2. In a container as set forth in claim 1, said body and closure means having their mutually abutting surfaces made of heat-fusible plastic having a melting point below the temperature at which other materials in the body and closure means would be damaged.

3. In a container as set forth in claim 1, said body and closure means comprising paperboard cores coated with heat-fusible plastic material, and at least one side including a metal foil laminated to the core beneath said plastic coating, whereby when the container panels are heat-sealed together the metal foil will quickly dissipate the heat from the area to which it is applied.

4. In a container as set forth in claim 1, said slits being located in the tab parallel to but spaced from said extensions of the crease lines.

5. A container comprising body panels joined together along longitudinal lines to form a hollow polygonal body; and end closure means closing at least one end of said body and each including an end panel; a plurality of flanges bent at right angles to the end panel along crease lines therebetween and fitted into the hollow body and sealed thereto with the flanges facing outwardly thereof; and a tab integrally connected with the end panel in each corner thereof within the space between extensions of the crease lines across the widths of the flanges, the tabs being partially separated from the flanges by slits located in the tabs adjacent to and parallel with the extensions of the crease lines, and each slit extending partway inwardly toward the intersection of said crease lines; and each tab being folded along its diagonal equidistant between said crease lines and sealed to the flanges to overlie their intersection.

6. In a container as set forth in claim 5, said body and closure means having their mutually abutting surfaces made of heat-fusible plastic having a melting point

below the temperature at which other materials in the body and closure means would be damaged.

7. In a container as set forth in claim 1, said body and closure means comprising paperboard cores coated with heat-fusible plastic material, and at least one side including a metal foil laminated to the core beneath said plastic coating, whereby when the container panels are heat-sealed together the metal foil will quickly dissipate the heat from the area to which it is applied.

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